

should concern themselves not only with parents and sibs and children, but with in-laws too.

Yours, etc.,

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## Reproductive Physiology

*To the Editor, Eugenics Review*

SIR,—Dr. Parkes, in his most interesting paper on reproductive physiology published in the *EUGENICS REVIEW* for April 1946, mentions that spermatozoa in the male tract retain their fertilizing power much longer than when in the female tract, and that this "is presumably due to the existence of particularly favourable conditions in the epididymis." There is, perhaps, an alternative explanation in the observed fact that during the process of ejaculation the spermatozoa receive some form of stimulant—this presumably being a secretion from the prostate or Cowper's glands. This being so, is it not possible that exhaustion, and consequent inability to fertilize an ovum, might follow this period of greatly stimulated activity?

Concerning the survival of spermatozoa in the female reproductive tract it is interesting to recall the facts regarding bees and wasps, where all the queen wasps are inseminated in the autumn, before they go off to hibernate, retaining the spermatozoa in the spermatheca throughout the winter. All the eggs laid during the following spring and summer are fertilized, and not until the late summer are the unfertilized eggs laid which are to develop into the drones. The queen bee, also from her single insemination, lays upwards of 2,000 eggs per diem during the brood rearing season, or about 150,000 to 200,000 per annum (Betts), and continues to do so for three to five years—controlling at will whether each single egg shall be fertilized or not. (The eggs laid in drone cells being, of course, unfertilized.) The mechanism by which this is accomplished is not known, but it is an observed fact (Nachtsheim and others) that each egg that is to be female has from three to seven spermatozoa within the egg (never less, rarely more), one of which spermatozoa—it appears to be the one which is by chance nearest to the female pronucleus—unites with the pronucleus and effects the actual fertilization of the egg. The remaining spermatozoa degenerate and vanish. It is therefore safe to conclude that the majority of the spermatozoa within the female retain their power to fertilize for a period of several years. (And it also seems safe to conclude that it is a eugenic blessing that such achievements in spermatozoic longevity do not appertain to mankind.)

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## Trend of National Intelligence

*To the Editor, Eugenics Review*

SIR,—I was unfortunately prevented from attendance at the very interesting Galton Lecture delivered by Dr. Godfrey Thomson last February. Otherwise I might have drawn attention to what seems to me a very important omission in his treatment of the "Trend of National Intelligence." In a contribution that I made recently to the *EUGENICS REVIEW* I referred slightly to the psychological factor operative in the process of reproduction and it appears necessary to call attention to the omission of its consideration from Dr. Thomson's paper. I refer to the now undoubted fact that the highly educated woman as a direct consequence of her adoption of the student habit very frequently loses the sexual instinct. But she is just the one who achieves the highly paid post and thus also endows herself with a strong economic bias to celibacy, or, if she does marry, against the bearing of children. But while recognizing this economic factor one must claim that it is the psychological that is really the important one even if the economic intensifies the problem. Let me illustrate and emphasize the matter by quoting a specific instance. I had a friend who was engaged to a girl with whom he was very much in love. She was a young schoolmistress (that type that is such a favourite with American novelists), a perfect blonde and with a good deal of intelligence. She married and the union resulted in a most unhappy situation and after a long endurance was ended by a divorce. Now had the modern very natural desire for the higher education of women not provided the opportunity for it in the case mentioned the girl would have entered some manual or domestic calling where the big salary would not occur and fairly early in life she would have married and passed on her intelligence to her children.

The statement will probably arouse in many minds a profound resentment. Especially will the highly educated woman be provoked, for the associations of sex to which, if she be a well-brought-up person, she will attach many powerful educational prejudices, will make it seem repulsive. She will never have these prejudices corrected by the emergence of desires that would naturally adjust them. It is a strange disappointing situation for civilization to bring us to. It seems ironical that the general desire to give to women all those things that seem most beneficial should be leading to the inevitable impoverishment of the race and in addition should be making marriage difficult in the case of those who are most attractive as wives and very disastrous to those who achieve it. To the husbands it promises a Dead Sea apple.

It seems impossible to suggest any remedy, especially in the present state of popular prejudice,

but the difficulty will not be removed by ignoring it.

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## Is Britain Over-populated?

*To the Editor, Eugenics Review*

SIR,—In his admirable letter (April 1946, p. 59) entitled "Is Britain Over-populated?" Mr. Bernard Charlesworth calls his opinion a minority one. It certainly is not, among experts on optimum population. Since I published a book with that title, nearly twenty years ago, there has been an amazing growth of competent opinion on the subject. The chief American universities are appointing Professors of Population, and they all agree that a low ratio of population to natural resources is the essential condition of a high and secure standard of life. Whelpton has even shown that the present American density of population, although only one-twelfth of the British, is still too great.

Economists divide production into three categories: primary, secondary, and tertiary. Primary production includes all raw animal and vegetable products: cattle, sheep, pigs, fowls, fish, game, timber, and so on. The amount of these products depends almost entirely on the available land, and hardly at all on labour. Australia has only 7 million people, but she has more than three times as many sheep as Britain, France, and Germany combined. Warren Thompson showed that Japan has thirty times as many human beings as the State of Iowa, but Iowa has six times as many cattle, sheep and pigs as Japan. In that case the density of the human population actually made an animal population impossible. We have to import 96 per cent of our timber, while most lightly populated countries have an ample supply at their doors.

Field crops depend in a certain degree on labour, but the extent of land per worker is far more important. Colin Clark has shown that each Australian worker has 124 times as much land as a Japanese worker, and the result is that each Australian produces thirteen times as much as a Jap, although each Japanese acre produces ten times as much as an Australian one. Clark also shows that the four countries, New Zealand, Australia, Argentina and Uruguay, which easily lead the world in production per worker, are precisely the four which employ fewest workers per square mile.

Secondary production includes mining, manufacturing and building. The Reid Report told us that mines differ greatly in richness. Obviously, if our population were halved, we could shut down the poorer half of our mines, and work only the richer half. The case is not so clear with manufacturing and building, but Colin Clark shows that,

taking secondary industry as a whole, "the highest productivities are found in America and Canada, and much lower productivity in Europe." If Canada with three to the square mile comes second in the world, it is evident that Britain's 525 to the square mile has no economic justification.

Tertiary production consists of services which do not create any material commodity. Such are transport, trade, professional services, musical, literary and artistic work, and so on. Here the rule is reversed. In a fairly dense population you can have more frequent trains, larger shops, better surgeons and greater actors.

For the mass of the people primary production is incomparably the most important, and secondary is more important than tertiary. It therefore follows that a low ratio of population to natural resources is the essential condition of a high and secure standard of life.

This theory is corroborated by the fact that clearances of population have actually proved very beneficial. A hundred years ago, when Ireland had 8 million people, she was in a state of beggary alternating with famine. Now she has only 4 million, and has raised her standard of life more than any other country. Colin Clark ranks her fourth in Europe, and ninth in the world. The same result followed the Black Death in England and the Thirty Years War in Germany.

Finally, the fewer people we have to-day, the better for posterity. Irrecoverable destruction of minerals, forests, and even farm land, is always going on. "Copper, tin, gold and phosphates, at the present rate of production, are believed to have a further life of less than a century," says Professor Desch, an eminent metallurgist. There is much similar information about other things.

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*To the Editor, Eugenics Review.*

SIR,—I should like to support the view on population expressed in your April issue (p. 59) by Bernard Charlesworth.

I agree that the Mrs. Joneses and the Mrs. Smiths know more about this subject than is generally realized, and during discussions following many talks on population to groups of working-class women in recent years, I can only recall two mothers who were in favour of large families. This opinion was in each case hotly contested by others who thought two children were enough; any which arrived subsequently being regarded as "accidents."

Like your correspondent I have found that after years of misleading statements in the popular Press, e.g. the "inexorable fact" that in 1943 our population would begin "a steep decline," and